

STEP-BY-STEP SYSTEM
TRUNK CIRCUIT
FOR TIME OF DAY SERVICE
FROM SELECTOR MULTIPLE TO "A" SWITCHBOARD
ARRANGED TO ABSORB
FROM 1 TO 5 DIGITS

DEVELOPMENT

1. PURPOSE OF CIRCUIT

- 1.1 This circuit is designed to provide connection to a step-by-step "A" switchboard from selector levels for time of day service and is arranged to absorb from one to five digits of the dialed number, thus permitting the assignment of a subscriber number to the "A" switchboard for this service.

2. WORKING LIMITS

- 2.1 Subscriber line dialing.
- 2.11 Maximum external circuit loop 750 ohms.
- 2.12 Minimum insulation resistance 15,000 ohms.
- 2.2 Dial speed limitations 8-11 p.p.s.

OPERATION

3. FUNCTIONS

- 3.1 To provide transmitter battery supply to the calling subscriber.
- 3.2 To hold preceding selectors under control of the calling subscriber.
- 3.3 To absorb predetermined number of digits which the subscriber will be required to dial because of use of a regular subscriber number for the "A" switchboard with this service.
- 3.4 To provide a lamp signal to the operator after the digits have been absorbed.

- 3.5 To provide audible ringing tone to the subscriber after digits have been absorbed.
- 3.6 To extinguish the lamp signal when the operator answers.
- 3.7 To provide group busy registration when all trunks in a group are busy.
- 3.8 To reverse battery and ground to the selector when the operator answers, to provide charge supervision on calls from coin box or message rate lines.
- 3.9 To provide peg count registration, remove audible ringing tone to the subscriber, and connect through the talking path, when the operator answers.
- 3.10 To provide supervision to the "A" operator.
- 3.11 To restore switch to normal when subscriber disconnects.
- 3.12 To relight answering lamp if operator disconnects first.
- 3.13 To make trunk busy to other selectors until operator disconnects when subscriber disconnects first.
- 3.14 To give release alarm when switch fails to restore to normal.

4. CONNECTING CIRCUITS

- 4.1 Selector circuits.
- 4.2 Traffic register circuit.
- 4.3 Answering jack circuit.
- 4.4 Trouble alarm circuit.
- 4.5 Power ringing circuit.

DETAILED DESCRIPTION

5. SEIZURE

When the trunk is seized the (A) relay operates and operates relay (B). The (A) relay also removes ground from the "BR" lead to the traffic register circuit in order to operate the register if all trunks in the group are busy. Relay (B) connects the (A) retardation coil across the trunk toward the "A" switchboard for supervision to the operator, provides ground to the sleeve to hold preceding selectors, cuts through the operating path for the (C) relay to the back contact of the (A) relay and opens the "BR" lead to the traffic register circuit to prevent ground from being connected to it when the (A) relay releases on dial pulses. When the first digit is dialed the (C) relay operates on the first open

period of the dial since the (A) relay releases. The (B) relay remains operated over the open period of the dial and the (C) relay remains operated over the closed periods. The (C) relay operated connects ground through to the rotary magnet of the switch which operates and steps to the first terminal. When the first digit dialed is completed the (A) relay remains operated, releasing the (C) relay. The (C) relay released, connects ground to the brush of switch bank 1 to operate the (PU) relay if connected to terminal 1. If the (PU) relay is connected to some succeeding terminal, it is necessary to dial additional digits which move the switch in the manner described above until the terminal connected to relay (PU) is reached. When this terminal is reached audible ringing tone is connected through bank 2 to the calling subscriber and the (PU) relay operates. The (PU) relay operated locks under control of the (B) relay, connects battery to the "L" lead to light the answering lamp and opens the circuit to the rotary magnet of the switch to prevent moving in case extra digits are dialed in error.

6. OPERATOR ANSWERS

When the operator answers the (SL) relay operates and extinguishes the answering lamp, connects another ground supply to the sleeve and operates the (D) relay. The (D) relay supplies ground to the "M" lead for operating the peg count register, connects the talking leads through, reverses battery and ground to the selector to provide charge supervision to coin box and message register lines and removes audible ringing tone to the subscriber.

7. DISCONNECTION

If the operator disconnects first the (SL) relay releases, releasing the (D) relay and relighting the answering lamp as an indication that the subscriber is still connected to the trunk. When the subscriber disconnects first the (A) relay releases which operates the (C) relay and releases the (B). The (B) relay being slow to release provides time for operating the (C). When the (B) relay is released and the (C) operated ground is removed from the sleeve of the preceding selector allowing it to release. The (B) relay also provides ground to the release magnet of the switch through the off-normal contacts allowing it to return to normal and removes the (A) retardation coil from across the trunk to provide disconnect supervision to the (A) operator. If the switch fails to return to normal the switch trouble alarm circuit functions to indicate the fact. When the (C) relay releases due to the release of the (B), ground is again connected to the sleeve lead to hold the circuit busy to other hunting selectors until the operator disconnects. The (B) relay released also

releases the (PU) relay. When the operator disconnects the (SL) relay releases, removes ground from the sleeve and releases the (D) relay and the circuit is restored to normal.

BELL TELEPHONE LABORATORIES, INC.

DEPT. 332-A

ARB)
WHM)IX